

**Two New *Heliococcus* Species,
a Key to the North American Species,
and a List of World Species.**

(Homoptera: Coccoidea: Pseudococcidae)

DOUGLASS R. MILLER

*Systematic Entomology Laboratory, IIBIII, USDA, ARS,
Beltsville, Maryland 20705*

In this paper two new species of *Heliococcus* are described for inclusion in a study on the mealybugs of San Clemente Island. Because no comprehensive work has been published on *Heliococcus*, a diagnosis of generic characters and a list of known species are given.

HELIOCOCCUS SULC, 1912.

Type species.—*Heliococcus bohemicus* Sulc, 1912, by monotypy.

Diagnosis.—Adult female: anal lobes large, strongly protruding, normally sclerotized; ventral-lobe sclerotization normally elongate and conspicuous; 2–18, normally 17 or 18, pairs of cerarii; 2 or 3 conical setae in each cerarius; multilocular pores, when present, ventral only (except on *H. phaseoli*), normally restricted to areas near vulva, sometimes absent; quinquelocular pores restricted to venter (except on *H. dorsiporosus*), confined to medial and mediolateral areas; trilocular pores present in all areas except medial and mediolateral areas of venter; small discoidal pores sparse on both surfaces; crateriform tubular ducts present; oral-collar tubular ducts normally present, restricted to venter; anal ring with 3 pairs of setae and 3–5 rows of pores; dorsal and ventrolateral setae normally conical; circulus normally present; hind legs with or without translucent pores; tarsal digitules not apically capitate; claws each with large denticle; claw digitules capitate; antennae normally 9-segmented; with 2 pairs of ostioles.

Notes.—*Heliococcus* is most closely related to *Saliococcus* Kanda and *Takahashicoccus* Kanda in that all three genera possess the characteristic crateriform tubular ducts. *Saliococcus* and *Takahashicoccus* differ from *Heliococcus* in possessing cerarii which each contain more than 3 conical setae. In *Heliococcus* all but the ocular cerarii contain less than 4 conical setae.

LIST OF WORLD SPECIES OF HELIOCOCCUS

Except for one questionably placed Ethiopian species, *H. phaseoli*, *Heliococcus* is exclusively Holarctic. The following list has been compiled from the literature and includes 39 species and subspecies, eight from the New World and 31 from the Old World.

1. *adenostomae* McKenzie, 1960: 707 (California)
2. *artemisiae* Ter-Gigorian, 1967: 134 (Armenian SSR)
3. *atraxididis* Bazarov, 1963: 38 (Tadzhik SSR)
4. *atriplicis* McKenzie, 1964: 235 (California)
5. *bambusae* (Takahashi) (Taiwan)
Phenacoccus bambusae Takahashi, 1930: 6
Heliococcus bambusae (Takahashi), Goux, 1934: 171
6. *bohemicus* Sulc, 1912: 39 ("Bohemia"; France; Germany; USSR)
7. *caucasicus* Borchsenius, 1949: 279 (Armenian SSR)
8. *cinereus* Goux, 1934: 164 (France)
9. *clemente* Miller, new species (California)
10. *cydoniae* Borchsenius, 1949: 272 (USSR)
11. *deserticola* Miller, new species (Mexico; Arizona, California, Nevada, New Mexico, Texas)
12. *destructor* Borchsenius, 1941: 6 (Kirgiz SSR, Kazakh SSR, Tadzhik SSR, Turkmen SSR, Uzbek SSR)
13. *dorsiporosus* Danzig, 1971: 382 (Eastern USSR)
 (It is questionable that this species belongs in *Heliococcus* because it has dorsal quinquelocular pores.)
14. *glycinicola* Borchsenius, 1956: 678 (Korea)
15. *halocnemi* Borchsenius, 1949: 277 (Uzbek SSR)
16. *herbaceus* Borchsenius, 1956: 678 (Korea)
17. *insignis* (Lobdell) (Kansas, Louisiana, Mississippi)
Phenacoccus insignis Lobdell, 1930: 210
Heliococcus insignis (Lobdell), Ferris, 1950: 97
18. *kehejanae* Ter-Grigorian, 1967: 136 (Armenian SSR)
19. *kurilensis* Danzig, 1971: 386 (Eastern USSR)
20. *marginalis* Goux, 1953: 104 (France)
21. *maritimus* Danzig, 1971: 388 (Eastern USSR)
22. *minutus* (Green) (Channel Island of Guernsey, England)
Phenacoccus minutus Green, 1925: 519
Heliococcus minutus (Green), Williams, 1962: 29
23. *montanus* Borchsenius, 1949: 274 (Tadzhik SSR, Uzbek SSR)
24. *nivearum* Balachowsky, 1953: 238 (France; USSR)
25. *nivearum austriacus* Balachowsky, 1953: 240 (Austria)
26. *oligadenatus* Danzig, 1972: 333 (Mongolian Republic)
27. *osborni* (Sanders) (Canada; Colorado (?), Indiana, Iowa, Louisiana, Missouri, New York, Ohio, Virginia; Egypt (?))
Phenacoccus (Paroudablis) osborni Sanders, 1902: 284
Phenacoccus pettiti Hollinger, 1917: 281
Heliococcus osborni (Sanders), Ferris, 1950: 99
28. *pavlovskii* Borchsenius and Tereznikova, 1959: 491 (Maritime Territory, USSR)
29. *phaseoli* (Laing) (Sierra Leone)
Phenacoccus phaseoli Laing, 1929: 475
Heliococcus phaseoli (Laing), Goux, 1934: 171
 (Based on the large number of dorsal multilocular pores, it is possible that *phaseoli* does not belong in *Heliococcus*.)
30. *radicicola* Goux, 1931: 113 (France; Germany; Poland; Sweden; Crimea)

31. *salviae* Borchsenius, 1949: 282 (Tadzhik SSR)
32. *saxatilis* Borchsenius, 1949: 276 (Armenian SSR)
33. *Slavonicus* Borchsenius and Tereznikova, 1959: 492 (Ukrainian SSR)
34. *stachyos* (Ehrhorn) (California)
Phenacoccus stachyos Ehrhorn, 1900: 313
Heliococcus stachyos (Ehrhorn), Goux, 1934: 171
35. *sulcii* Goux, 1934: 167 (France; Germany; Ukrainian SSR)
36. *szetshuanensis* Borchsenius, 1962: 232 (China)
37. *tesquorum* Borchsenius, 1949: 284 (Kazakh SSR)
38. *wheeleri* (King) (Texas)
Dactylopius wheeleri King, 1902: 285
Pseudococcus wheeleri (King), MacGillivray, 1921: 133
Heliococcus wheeleri (King), Ferris, 1953: 363
(Described from immatures. The identity of this species is uncertain. Ferris (1953) believed that it might be a senior synonym of *insignis*.)
39. *zizyphi* Borchsenius 1958: 161 (China)

LIST OF SPECIES ERRONEOUSLY PLACED IN HELIOCOCCUS

1. *hystrix* (Baerensprung) = *Phenacoccus hystrix* (Baerensprung)
Coccus hystrix Baerensprung, 1849: 174
Phenacoccus hystrix (Baerensprung), Lindinger, 1912: 293
Heliococcus hystrix (Baerensprung), Thiem, 1930: 140
2. *malvastrus* McDaniel = *Ferrisia virgata* (Cockerell)
Heliococcus malvastrus McDaniel, 1962: 323; McKenzie, 1967: 181
3. *multiporti* Takahashi
Heliococcus multiporti Takahashi, 1951: 18
(This species does not belong in *Heliococcus* because it lacks crateriform tubular ducts. It probably should be placed in *Phenacoccus*, but without specimens I cannot be positive.)
4. *sakai* Takahashi
Heliococcus sakai Takahashi, 1951: 16
(This species does not belong in *Heliococcus* because it lacks crateriform tubular ducts. It probably should be placed in *Phenacoccus*, but without specimens I cannot be positive.)
5. *takae* (Kuwana) = *Saliococcus takae* (Kuwana)
Dactylopius takae Kuwana, 1907: 184
Phenacoccus takae (Kuwana), Kuwana, 1917: 6
Saliococcus takae (Kuwana), Kanda, 1934: 309
Heliococcus takae (Kuwana), Kanda, 1935: 70
(In 1934 Kanda chose *takae* to be the type species of *Saliococcus* Kanda. In 1935 he stated that *Saliococcus* was a junior, subjective synonym of *Heliococcus* and placed *takae* in that genus. The description of *Saliococcus tokyoensis* (1959a) indicates that he changed his mind about the status of *Saliococcus*. The presence of cerarii with more than 3 conical setae easily distinguishes *Saliococcus* from *Heliococcus*.)
6. *takahashii* Kanda = *Takahashicoccus takahashii* (Kanda)
Heliococcus takahashii Kanda, 1935: 73
Takahashicoccus takahashii (Kanda), Kanda 1959b: 239

7. *wilmattae* (Cockerell) = *Phenacoccus wilmattae* Cockerell
Phenacoccus wilmattae Cockerell, 1901: 57
Heliococcus wilmattae (Cockerell), Goux, 1934:171
 (This species was placed in *Heliococcus* because of a misidentification of *wilmattae* by Bueker (1930).)

KEY TO ADULT FEMALES OF NORTH AMERICAN
 SPECIES OF *HELIOCOCCUS*¹

1. With 15 or more pairs of cerarii 3
 With less than 10 pairs of cerarii 2
- 2(1). Large-sized crateriform tubular ducts surrounded by cluster of small-sized ducts; multilocular disk pores absent *clemente* Miller, n. sp.
 Large-sized crateriform tubular ducts without cluster of small-sized ducts; multilocular disk pores present near vulva *atriplicis* McKenzie
- 3(1). Crateriform tubular ducts of at least 2 sizes 5
 Crateriform tubular ducts generally of 1 size, occasionally with 1 or 2 smaller ducts in dorsomedial areas of abdomen 4
- 4(3). Venter with multilocular disk pores and oral-collar tubular ducts; with at least 10 trilocular pores associated with each cerarius *insignis* (Lobdell)
 Venter without multilocular disk pores and oral-collar tubular ducts; with 5 or fewer trilocular pores associated with each cerarius
 *adenostomae* McKenzie
- 5(3). Large-sized crateriform tubular ducts without associated smaller ducts; multilocular disk pores normally present 6
 Large-sized crateriform tubular ducts along body margin with associated clusters of smaller ducts; multilocular disk pores absent *deserticola* Miller, n. sp.
- 6(5). Small-sized crateriform tubular ducts much more abundant than large-sized ducts; normally with a cluster of oral-collar tubular ducts near anterolateral margins of abdominal segment IX; oral-collar tubular ducts normally present on venter of abdominal segments VIII-V or IV *osborni* (Sanders)
 Small-sized crateriform tubular ducts less abundant or equal in number to large-sized ducts; without a cluster of oral-collar tubular ducts on abdominal segment IX; oral-collar tubular ducts normally restricted to abdominal segments IX or VIII, rarely on VII *stachyos* (Ehrhorn)

***Heliococcus clemente*, new species**

(Fig. 1)

Suggested common name.—San Clemente mealybug.

Type material.—Holotype adult female, PYRAMID HEAD, SAN CLEMENTE ISLAND, LOS ANGELES COUNTY, CALIFORNIA, 12 May 1973, collected under rock, D. R. Miller and A. S. Menke (USNM).

Adult female.—Holotype, mounted, 2.9 mm long, 1.8 mm wide. Body oval; anal lobes strongly protruding and sclerotized, with 3 large-sized crateriform ducts on each lobe.

¹ *H. wheeleri* is not included because adult females are not available.

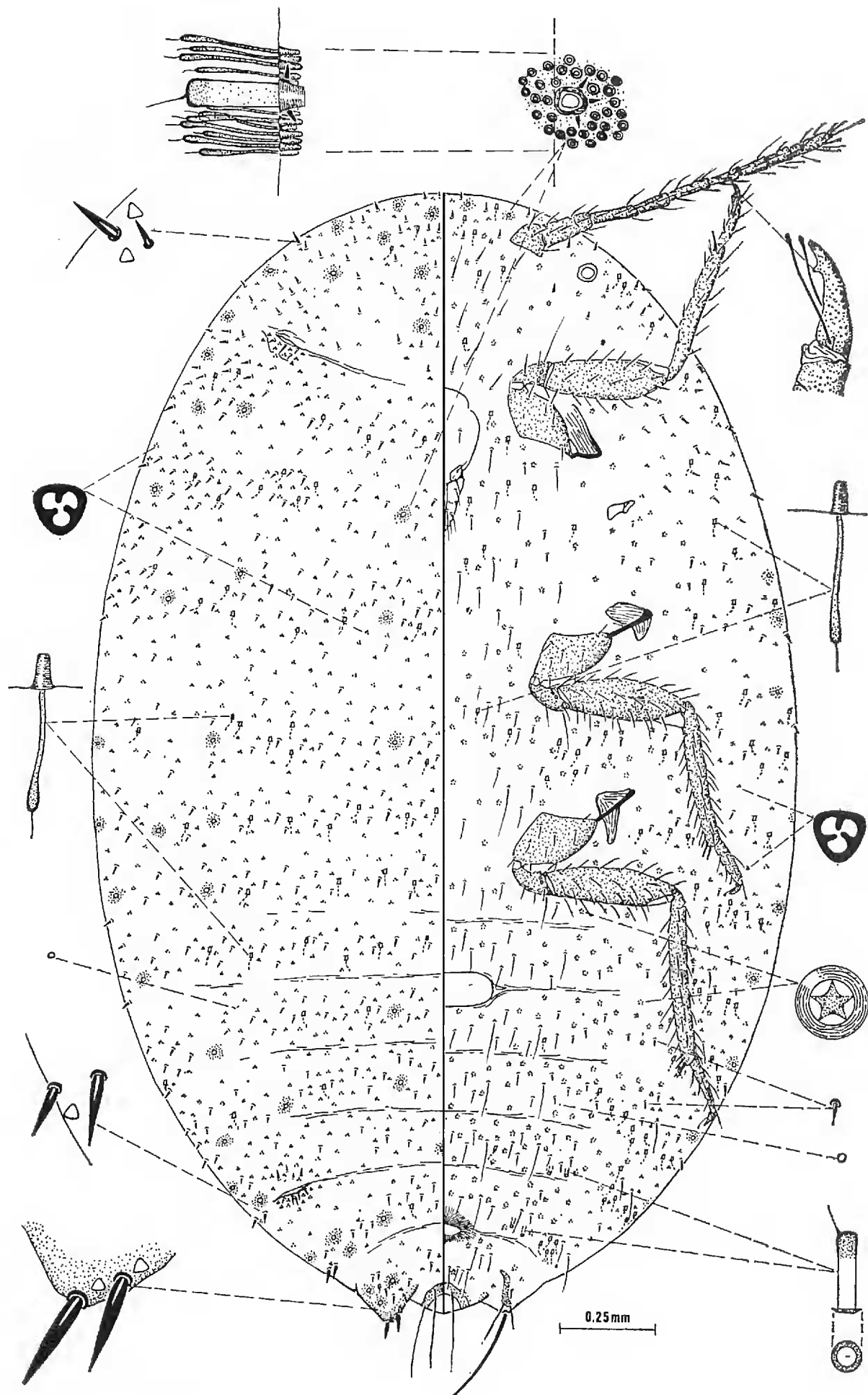


FIG. 1. *Heliococcus clemente*, adult female.

Dorsum with 3 pairs of cerarii on abdomen, 1 pair on head. Anal-lobe cerarii each with 2 elongate, conical setae, 2 or 3 trilocular pores, and large area of basal sclerotization. Remaining abdominal cerarii with progressively smaller conical setae, with or without trilocular pores, without basal sclerotization. Ocular cerarii each with 1 large and 1 small conical seta, 1 or 2 associated trilocular pores, no basal sclerotization. Multilocular disk pores and quinquelocular pores absent. Trilocular pores scattered over surface. Discoidal pores present, few. Crateriform tubular ducts of 2 sizes: larger size scattered over surface, with 1-4 setae at base of each sclerotized crater, surrounded by 13-35 (av. 25) small-sized ducts; smaller size present in clusters around larger ducts and singly in medial, mediolateral, and rarely lateral areas; small-sized crateriform ducts without associated setae. Body setae conical.

Anal ring bent over apex of abdomen, with 4 or 5 rows of pores; each of 6 anal-ring setae noticeably longer than greatest diameter of ring.

Venter with anal-lobe sclerotization elongate. Multilocular disk pores absent. Quinquelocular pores abundant in medial and mediolateral areas, absent elsewhere. Trilocular pores present in mediolateral and lateral areas. Discoidal pores present in small numbers. Crateriform tubular ducts of same sizes as on dorsum, clusters composed of 1 large- and many small-sized ducts, clusters restricted to near body margins; small-sized ducts lightly scattered over surface, least abundant on medial areas of abdomen. Oral-collar tubular ducts with conspicuous, sclerotized dermal opening, restricted to mediolateral areas of abdominal segments VIII and VII. Body setae of 2 kinds: bristle-shaped setae present medially and laterally; conical setae present mediolaterally and laterally.

Circulus present. Legs with small translucent pores on dorsal surface of hind tibiae; hind tibia/tarsus ratio 1:3.1 and 1:3.2; hind tibia + tarsus length 604 and 616 μ ; claws with large denticle. Antennae 9-segmented, 823 and 854 μ long.

Notes.—This is the most unusual known species of *Helicococcus* in North America because of the large clusters of crateriform tubular ducts. It is most closely related to *H. deserticola*, herein described as new. *H. clemente* is also similar to *H. atriplicis* McKenzie in that both species have less than 15 pairs of cerarii. *H. atriplicis* differs in lacking crateriform tubular-duct clusters and in having a few multilocular disk pores around the vulva. *H. clemente* has many crateriform tubular-duct clusters and lacks multilocular disk pores.

H. clemente shows a remarkable resemblance to the Russian species *H. cydoniae*. Both species possess large clusters of crateriform tubular ducts and have small-sized crateriform ducts that lack associated setae. They can be readily separated as follows. *H. cydoniae* has multilocular disk pores surrounding the vulva, translucent pores on the hind coxae, no pores on the hind tibiae, and 18 pairs of cerarii. *H. clemente* has no multilocular disk pores, no translucent pores on the hind coxae, pores present on the hind tibiae, and no more than 4 pairs of cerarii.

***Helicococcus deserticola*, new species**

(Fig. 2-5)

Suggested common name.—Desert crateriform mealybug.

Type material.—Holotype adult female, 10 mi. N. ALAMO, LINCOLN COUNTY, NEVADA, 5 July 1970, on *Ambrosia dumosa* (Compositae), D. R. Miller, (USNM). Paratypes are as follows: Arizona: Welton, Yuma County, 27 March 1940, on *Encelia farinosa* (Compositae), R. C. Dickson. California: Niland, Imperial County, 19 March 1971, on *Ambrosia dumosa*, R. D. Goeden and D. W. Ricker; Picacho Peak, Imperial County, 14 December 1970 and 13 April 1971, on *Ambrosia ilicifolia*, R. D. Goeden and D. W. Ricker; 3 mi. N. Shoshone, Inyo County, 12 June 1963, on *Encelia frutescens* and *Eriogonum foliolosum* (Polygonaceae), D. R. Miller; Palm Desert, Riverside County, 28 April 1971, beaten from *Ambrosia dumosa*, R. D. Goeden and D. W. Ricker; Palm Springs, Riverside County, 29 April 1971, beaten from *Ambrosia dumosa*, R. D. Goeden and D. W. Ricker; Morongo Valley, San Bernardino County, 9 June 1963, on *Baccharis* sp. (Compositae), D. R. Miller; Twenty-nine Palms, San Bernardino County, 25 March 1970, 20 May 1970, 20 May 1971, *Ambrosia dumosa*, R. D. Goeden and D. W. Ricker; Yucca Valley, San Bernardino County, 20 May 1970, *Ambrosia dumosa*, R. D. Goeden and D. W. Ricker. Nevada: same data as for holotype. Texas: Presidio, Presidio County, 17 May 1951, on *Viguiera stenoloba* (Compositae), J. H. Russell. Mexico: 10 mi. W. Zacapu, Michoacán, 6 March 1972, under rock, D. R. Miller and F. D. Parker.

The 33 paratypes will be placed in the following collections: British Museum (Natural History), London; California Department of Agriculture, Sacramento; Florida State Collection of Arthropods, Gainesville; Muséum National D'Histoire Naturelle, Paris, France; Mexican National Collection, Mexico City; University of California, Davis; University of California, Riverside; University of Hawaii, Honolulu; U. S. National Museum (Natural History), Beltsville, Maryland; Virginia Polytechnic Institute and State University, Blacksburg; Zoological Institute, Academy of Sciences, Leningrad, USSR.

Adult female (Fig. 2).—Holotype, mounted, 2.6 mm long (paratypes 2.1-3.8), 1.8 mm wide (paratypes 1.2-2.7). Body oval, anal lobes strongly protruding and heavily sclerotized, with 3 large-sized crateriform tubular ducts on each lobe (paratypes with 3-5, av. 3.5).

Dorsum with 17 pairs of cerarii. Anal-lobe cerarii each with 2 elongate, conical setae, 4 or 5 trilocular pores, and large area of sclerotization. Remaining cerarii each with 2 somewhat smaller conical setae, 2-4 trilocular pores, and little or no basal sclerotization; ocular cerarii each with 3 conical setae. Multilocular disk pores and quinquelocular pores absent. Trilocular pores abundant. Discoidal pores sparse. Crateriform tubular ducts of 3 sizes: large-sized ducts scattered over surface, most abundant near body margin, with 2-5 associated setae, marginal ducts sometimes surrounded by cluster of 4-11 (av. 7) small-sized crateriform tubular ducts; medium-sized ducts present in medial and mediolateral areas, with 1 or 2 associated setae; small-sized ducts in clusters associated with larger ducts only, normally without associated setae. Body setae conical.

Anal-ring apical, bent over apex of abdomen, with 3 or 4 rows of pores; each of 6 anal-ring setae noticeably longer than greatest diameter of ring.

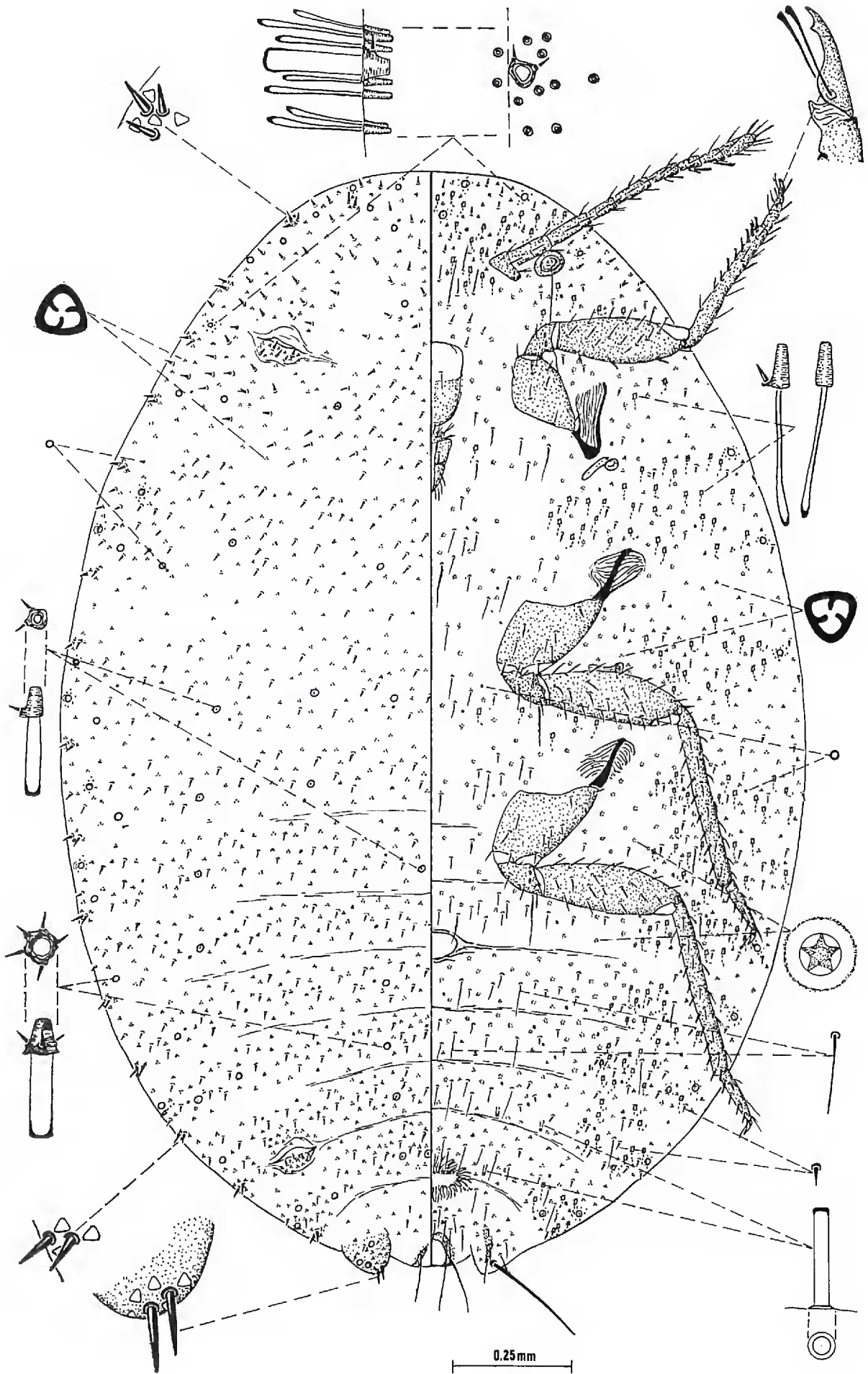


FIG. 2. *Heliococcus deserticola*, adult female.

Venter with conspicuous, elongate anal-lobe sclerotization. Multilocular disk pores absent. Quinquelocular pores present on medial and mediolateral areas. Trilocular pores present in mediolateral and lateral areas, and in medial areas of abdominal segments X-VI. Discoidal pores sparse. Crateriform tubular ducts of 2 sizes, same as larger and smaller sizes on dorsum: larger size always with associated cluster of small-sized ducts, restricted to lateral areas, with 2-6 associated setae; smaller size present in mediolateral and lateral areas, sometimes in clusters around larger ducts, normally without associated setae. Oral-collar tubular ducts with small dermal rim, restricted to mediolateral areas of abdominal segments VIII and VII. Body setae of 2 kinds: bristle-shaped setae present medially and laterally; conical setae present mediolaterally and laterally.

Circulus present. Legs with very small translucent pores restricted to dorsal surface of hind tibiae; hind tibia/tarsus ratio 1:3.2 and 1:3.3 (paratypes 1:3.3-1:3.6, av. 1:3.5); hind tibia + tarsus length 573 and 567 μ (paratypes 573-763 μ , av. 671); claws each with denticle. Antennae 9-segmented, 713 and 732 μ long (paratypes 683-946 μ , av. 836).

Variation.—Paratypes differ from holotype as follows: with 15 to 18 pairs of cerarii, normally with 18, with 2-4 setae, normally 2, in each ocular cerarius, sometimes with crateriform tubular-duct clusters more numerous along margin of dorsum, sometimes with small-sized crateriform ducts sparsely scattered over dorsal surface, occasionally with 1 associated seta, with 2-16 (av. 7) smaller ducts in clusters around larger ducts, with variable numbers of crateriform tubular-duct clusters along body margin, sometimes with ventromedial trilocular pores restricted to posterior 3 abdominal segments, without oral-collar tubular ducts on 1 specimen.

Notes.—The above description is based on 16 specimens from 8 localities.

H. deserticola is most closely related to *H. clemente* but differs in possessing 15-18 pairs of cerarii, crateriform tubular-duct clusters which are restricted to the body margin, crateriform clusters which are composed of 2-16 (av. 7) small-sized ducts, setae associated with some small-sized crateriform ducts, 3 sizes of crateriform ducts. *H. clemente* has 3 pairs of cerarii, crateriform tubular-duct clusters which are scattered over the dorsum, crateriform clusters which are composed of 13-35 (av. 25) small-sized ducts, no setae associated with the small-sized ducts, and 2 sizes of crateriform ducts.

H. deserticola has been confused with *H. stachyos*. These species can be separated as follows: *H. stachyos* normally has multilocular disk pores near the vulva and lacks clusters of crateriform tubular ducts; *H. deserticola* lacks multilocular pores and has clusters of crateriform tubular ducts.

H. deserticola shows a remarkable resemblance to the Russian species *H. kurilensis* in that both have clusters of small-sized crateriform tubular ducts surrounding a single larger duct. Unlike *H. clemente* and *H.*

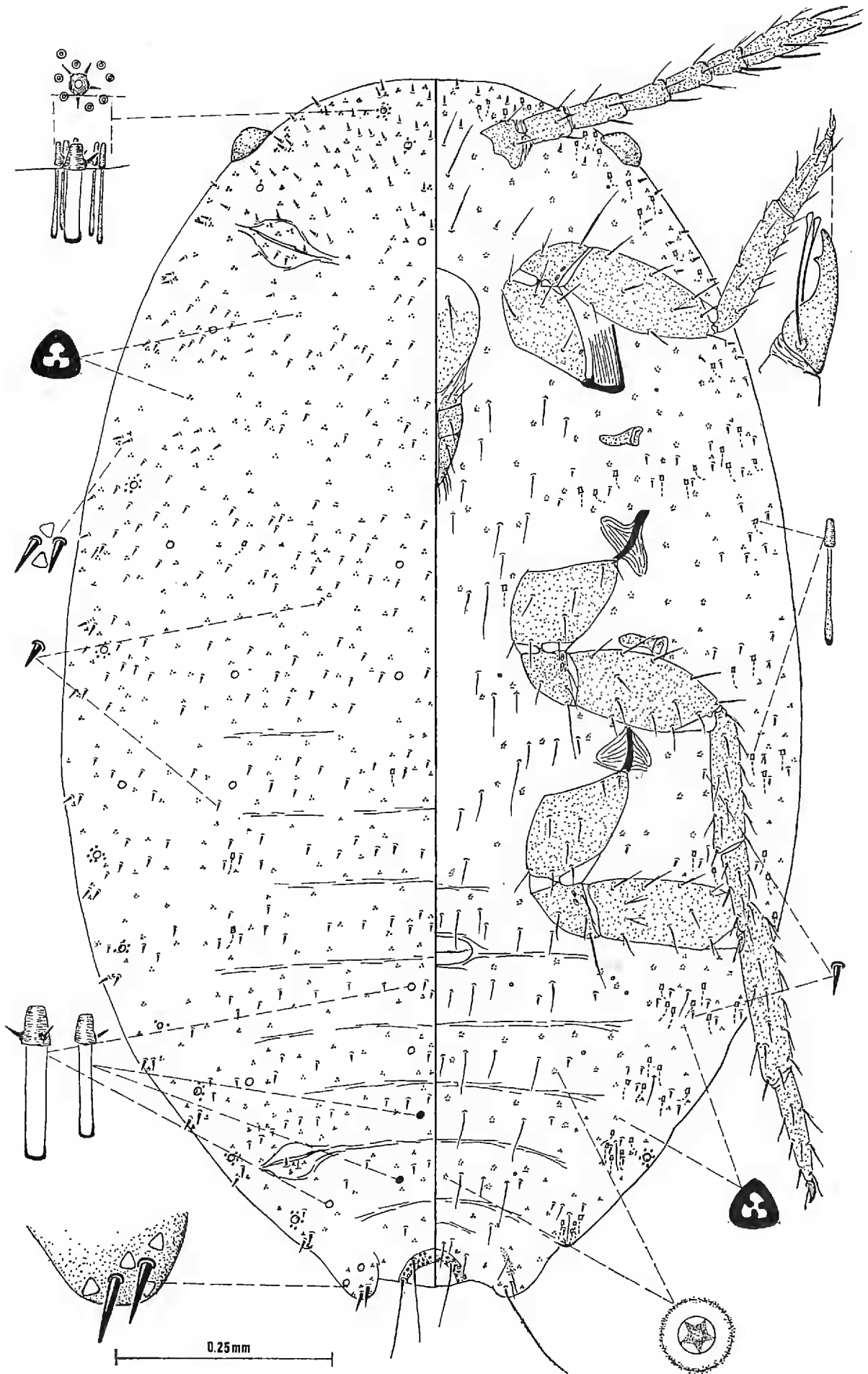


FIG. 3. *Heliococcus deserticola*, third instar female.

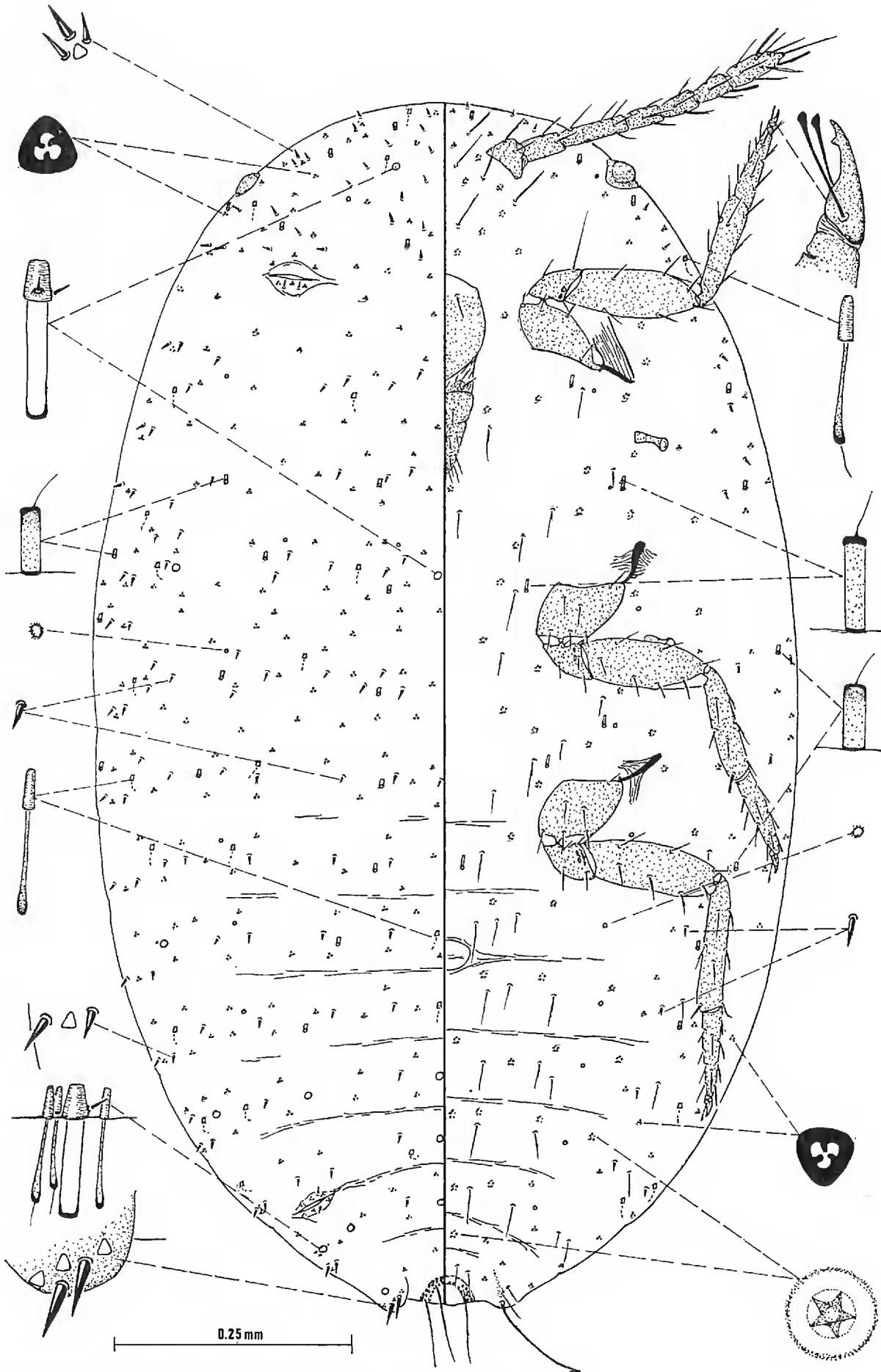


FIG. 4. *Heliococcus deserticola*, second instar male.

cydoniae, *H. deserticola* and *H. kurilensis* have only small clusters of these ducts. *H. kurilensis* differs from *H. deserticola* in having the crateriform clusters scattered over the entire dorsum and in having multilocular disk pores near the vulva; *H. deserticola* has the crateriform clusters restricted to the marginal areas and has no multilocular disk pores.

Third instar female (Fig. 3).—Same as for adult female except as follows: mounted, 1.4–2.1 mm long, 0.9–1.3 mm wide. Anal lobes each with 2 large-sized crateriform tubular ducts.

Dorsum with 18 pairs of cerarii. Anal-lobe cerarii each with 2–5 trilocular pores. Discoidal pores absent or sparse. Crateriform tubular ducts of 3 sizes: larger size with marginal ducts sometimes with 2–10 (av. 5.1) associated smaller-sized crateriform tubular ducts; medium-sized ducts present in medial areas of some posterior abdominal segments; small-sized ducts associated with larger ducts and scattered in small numbers in mediolateral and lateral areas.

Venter with crateriform tubular ducts of 2 sizes: larger size present on margin of abdominal segment VII, surrounded by cluster of small-sized ducts. Oral-collar tubular ducts absent.

Legs without translucent pores; hind tibia/tarsus ratio 1:1.7–1:1.8 (av. 1:1.8); hind tibia + tarsus length 311–415 (av. 366) μ . Antennae 7- or 8-segmented, 421–519 (av. 458) μ long.

Notes.—The above description is based on 2 specimens from 2 localities.

Second instar male (Fig. 4).—Same as for adult female except as follows: mounted 1.1 mm long, 0.7 mm wide. Anal lobes each with 1 large-sized crateriform tubular duct.

Dorsum with 17 pairs of cerarii. Anal-lobe cerarii each with 2 or 3 trilocular pores. Remaining cerarii sometimes indefinite, with widely separated cerarian setae. Crateriform tubular ducts of 2 sizes: large-sized ducts in small numbers over surface, with 1–4 associated setae, marginal ducts occasionally with 1–3 associated small-sized ducts; small-sized ducts scattered over surface. Oral-collar tubular ducts of 2 sizes: shorter ducts restricted to lateral areas of anterior abdominal segments, thorax, and head, of same size and shape as those on dorsum; longer ducts present medially near legs.

Legs without translucent pores; hind tibia/tarsus ratio 1:1.4; hind tibia + tarsus length 226 μ . Antennae 7-segmented, 317 μ long.

Notes.—The above description is based on 1 specimen.

First instar (Fig. 5; Sexes not distinguished).—Same as for adult female except as follows: mounted, 0.5 mm long, 0.2–0.3 mm wide. Anal lobes lightly sclerotized, without crateriform tubular ducts.

Dorsum with 16–18 indefinite cerarii. Anal-lobe cerarii each with 1 trilocular pore. Remaining cerarii with 1 associated trilocular pore of same size and shape as other triloculars; ocular cerarii normally absent, when present, with 2 conical setae. Trilocular pores scattered over surface, arranged in 4 or 5 pairs of longitudinal lines on abdomen. Discoidal pores and crateriform tubular ducts absent. Body setae arranged in 4 pairs of longitudinal lines on abdomen and head, median lines sometimes with additional row on thorax.

Anal ring with 2 rows of pores.

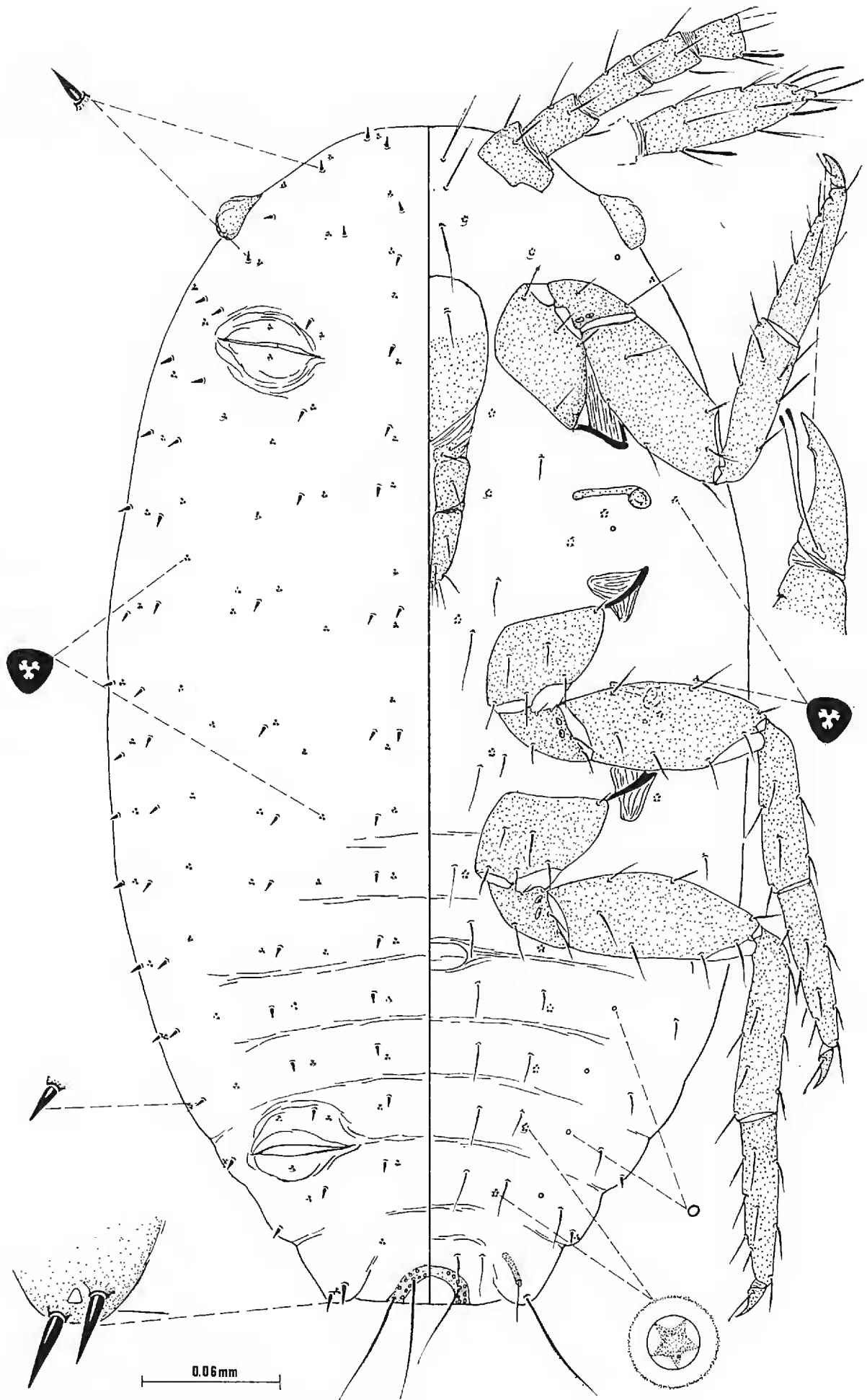


FIG. 5. *Heliococcus deserticola*, first instar.

Venter with quinquelocular pores normally distributed as in figure 5, sometimes with only 1 pore near mouthparts, occasionally with 3 pores near anterior spiracle and 2 near posterior spiracle. Trilocular pores nearly always present near spiracles, rarely with 1 or 2 present near body margin. Discoidal pores restricted to medio-lateral areas. Crateriform and oral-collar tubular ducts absent. Body setae bristle shaped.

Legs without translucent pores; hind tibia/tarsus ratio 1:1.0-1:1.1 (av. 1:1.1); hind tibia + tarsus length 168-188 (av. 177) μ . Antennae 6-segmented, 225-243 (av. 234) μ long.

Notes.—The above description is based on 8 specimens from 2 localities.

First instar nymphs of North American *Heliococcus* species have not been described previously. The first instars of *Heliococcus deserticola*, *Phenacoccus dearnessi* King (see Miller and Appleby, 1971), and *Heterococcus* spp. (see Miller, in press) are similar. The first instar of *H. deserticola* differs from that of *P. dearnessi* and *Heterococcus* spp. in having a circulus, conspicuous ostioles, and one size of trilocular pore.

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